

Dementia and Technology

Co-designing a daily management tool to support individuals living alone with Alzheimer's disease

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Purpose It is estimated that 18-51% of older adults live alone with Alzheimer's disease and related dementias (ADRD) [1]. Digital support tools have the potential to improve the daily functioning and independence of these individuals; yet, few are designed specifically for and with individuals with ADRD [2]. This abstract describes the design, development, and iterative evaluation of Interactive-Care (I-Care), a web-based daily management tool aimed at promoting aging-in-place among individuals with ADRD. **Method** Two individuals living alone with cognitive impairment (age 84-88, Montreal Cognitive Assessments scores of 19-20, education 12-18 years, both female) participated in an early-stage, user-centered evaluation of I-Care. Participants engaged in hands-on use of I-Care's core features, including the Home, Calendar, To-Do, and Notes pages. Platform acceptability was assessed using a customized Technology Acceptance Model (TAM) questionnaire measuring perceived ease of use, perceived usefulness, behavioral intention to use, and technology-related anxiety on a scale from 1-5, with 5 being very high. Iterative refinements were guided by repeated participant feedback and observation of task-based interactions over several weeks. A/B usability testing compared earlier and redesigned interfaces using task completion time, navigation accuracy, and user independence as outcome measures. **Results and Discussion** Participants demonstrated high acceptance of I-Care, with TAM scores indicating strong perceived ease of use ($M = 4.7$), perceived usefulness ($M = 4.8$), and behavioral intention to use ($M = 4.7$). Technology-related anxiety and privacy concerns were minimal ($M = 1.2$), suggesting high user confidence and comfort with the platform. A/B usability testing showed clear performance improvements in the redesigned interface compared to earlier versions, with faster task completion time and greater independent task execution across all pages. The most pronounced gains were observed for the Calendar and To-Do pages following workflow simplification and enhanced visual cues. Qualitative feedback reinforced these findings, highlighting the importance of clear labeling, simplified interactions, and incremental guidance in supporting confidence and independence. Participants expressed enthusiasm for the I-Care calendar and emphasized that subtle design changes such as color-coded indicators, step-by-step pop-ups, and enhanced visual cues substantially reduced confusion and frustration. While a limitation to generalizability, our small sample allowed for deep, case study level insights into usability challenges and user preferences. These observations provide a critical foundation tightly aligned with user needs and cognitive accessibility requirements for the next stage of research which include broad testing. Further, although I-Care is designed to support both individuals with ADRD and their caregivers, initial data collection focused exclusively on individuals with ADRD to ensure that the platform is independently operable by care recipients before extending evaluation to caregivers, whose onboarding is typically less challenging. Overall, this work highlights the importance of user-centered co-design for digital tools supporting individuals with cognitive impairment. Through iterative refinement informed by direct patient feedback, I-Care demonstrated high usability, acceptance, and improved task performance.

References

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